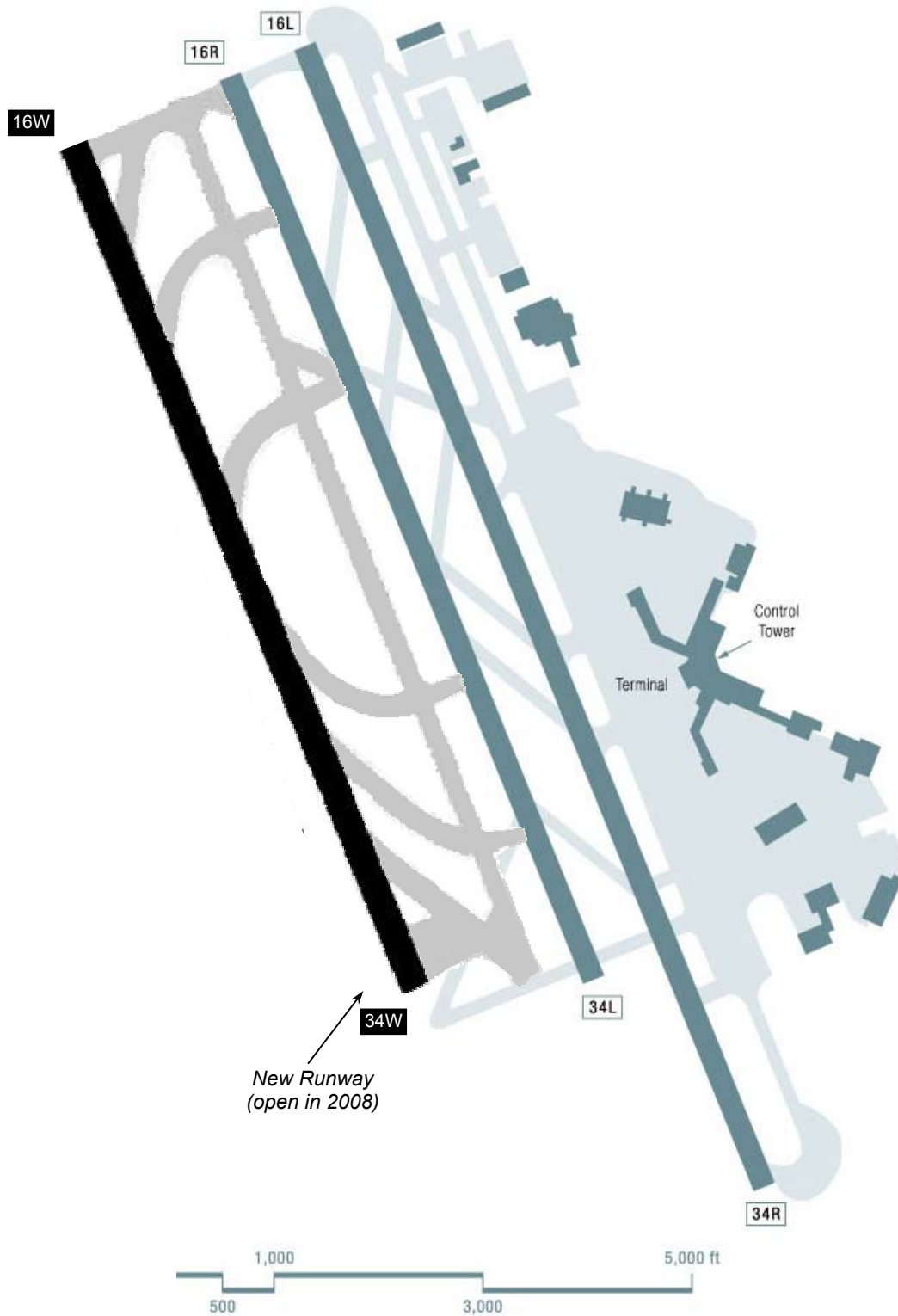


## SEATTLE – Seattle-Tacoma International (SEA)



## SEATTLE – Seattle-Tacoma International Airport (SEA)

### Benchmark Results

- The capacity benchmark for Seattle-Tacoma International Airport today is 80-84 flights per hour (arrivals and departures) in Optimum weather, when visual approaches can be conducted.
- The benchmark decreases to 74-76 flights per hour in Marginal conditions, and to 57-60 flights per hour in IFR conditions, for the most commonly used runway configuration in these conditions. The IFR benchmark assumes low visibility, leading to more conservative procedures for crossing the departure runway and separating arrivals and departures.
- Throughput at SEA is affected by the need to taxi arrivals across the Runway 16L/34R (and in the future, across the current Runway 16R/34L as well). The effect of runway crossings on the benchmark capacity could only be approximated in the model used. Also, the benchmark analysis does not consider less-favorable runway configurations, operations in very low ceiling and visibility conditions, taxiway and gate congestion, or other non-runway constraints. Actual throughput may therefore vary from these benchmark rates.
- Note that if the facility reported rates are significantly unbalanced (i.e., unequal numbers of arrivals and departures), the benchmark rates will be unbalanced as well. The facility reported rates reflect current operations at the airport during a busy hour, but such unbalanced rates cannot be sustained for extended periods.
- A new runway, planned for completion in 2008, will allow dependent parallel instrument approaches in Marginal and IFR conditions. This new runway (herein referred to as Runway 16W/34W) will be used when required by traffic volume or weather conditions. The future benchmark values assume the new runway is in use; this may not be the most common configuration in the future at SEA. The projected increase in the benchmark rate at SEA occurs *only* if airspace design, ground infrastructure, and environmental constraints allow full use of dependent approaches at SEA.
- The new runway is expected to benefit operations during arrival peaks. The actual increase in arrival throughput will be affected by other operational factors at SEA, such as the amount of departure traffic and the need for arrivals to cross the departure runway.
- Planned technological improvements at SEA include CEFR, which will allow visual in-trail separations in Marginal conditions. Although the benchmark rates for the new runway plus these improvements is the same as the rates for just the new runway, CEFR is expected to provide additional arrival capacity in Marginal conditions.
- The following charts compare actual hourly traffic with the calculated capacity curves for SEA. Some hourly traffic points lie outside the capacity curves. There are many possible reasons why this may occur without affecting operational safety, including more efficient sequencing of aircraft, or above average pilot and controller performance. Also, ceiling and visibility in IFR conditions may have been better than was assumed for deriving the benchmark value.

*These values were calculated for the Capacity Benchmarking task and should not be used for other purposes, particularly if more detailed analyses have been performed for the airport or for the individual programs.*

***The list of Planned Improvements and their expected effects on capacity does not imply FAA commitment to or approval of any item on the list.***

## SEATTLE – Seattle-Tacoma International Airport (SEA)

<i>Weather</i>	<i>Scenario</i>	<i>Configuration</i>	<i>Procedures</i>	<i>Benchmark Rate (per hour)</i>
<b>Optimum Rate</b>  Ceiling and visibility above minima for visual approaches (1700 ft ceiling and 3 mi visibility)  <i>Occurrence: 64%</i>	<b>Today</b>	Arrivals on Runways 16R, (16L) Departures on 16L, (16R) <i>Frequency of Use: 57% in Optimum conditions</i>	Visual approaches, visual separation	<b>80-84</b>
	<b>New Runway (2008)</b>	Arrivals on Runways 16R, (16W-new) Departures on 16L, (16R)	Dual simultaneous visual approaches, visual separation	<b>102</b>
	<b>Planned improvements (2013), including new runway</b>	Same		<b>102</b>
<b>Marginal Rate</b>  Below visual approach minima but better than instrument conditions  <i>Occurrence: 29%</i>	<b>Today</b>	Arrivals on Runway 16R Departures on 16L, (16R) <i>Frequency of Use: 89% in marginal conditions</i>	Instrument approaches, visual separation	<b>74-76</b>
	<b>New Runway (2008)</b>	Arrivals on Runways 16L, (16W-new) Departures on 16R, (16L)	Dependent instrument approaches, visual separation	<b>100</b>
	<b>Planned improvements (2013), including new runway</b>	Same	Dependent approaches, visual separation	<b>100</b>
<b>IFR Rate</b>  Instrument conditions (ceiling < 1000 ft or visibility < 3.0 miles)  <i>Occurrence: 7%</i>	<b>Today</b>	Arrivals on Runway 16R Departures on 16L <i>Frequency of Use: 89% in IFR conditions</i>	Instrument approaches, radar separation	<b>57-60</b>
	<b>New Runway (2008)</b>	Arrivals on Runways 16L, (16W-new) Departures on 16R	Dependent instrument approaches, radar separation	<b>72</b>
	<b>Planned improvements (2013), including new runway</b>	Same		<b>72</b>

**NOTE:** Data on frequency of occurrence of weather and runway configuration usage is based on FAA ASPM data for January 2000 to July 2002 (excluding 11-14 September 2001), 7 AM to 10 PM local time.

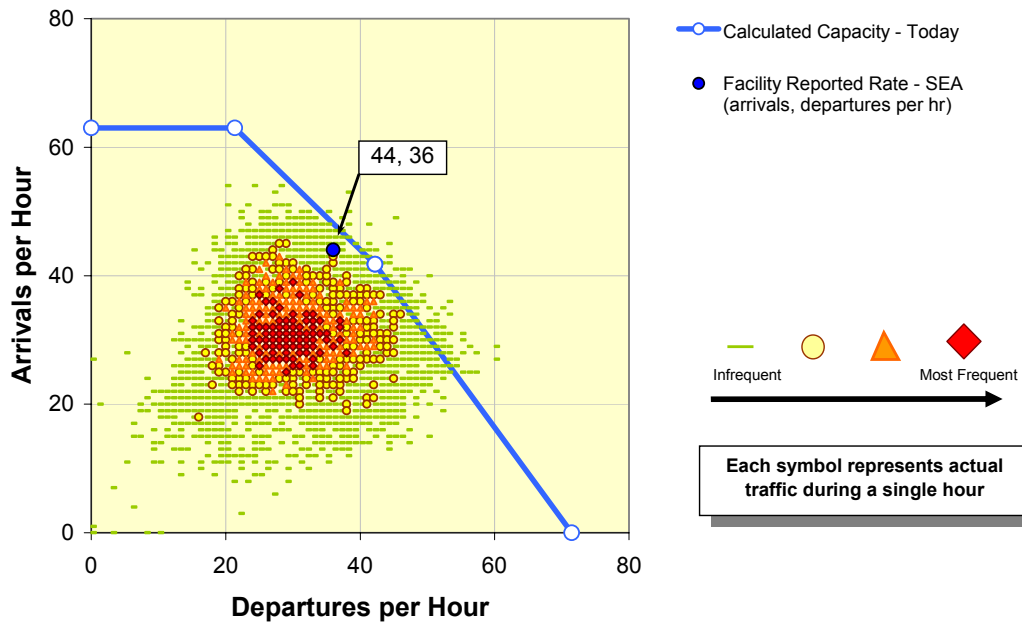
### Planned Improvements at SEA include:

- CEFR, for reduced in-trail separations between arrivals in Marginal conditions.
- Improved wake vortex procedures, for reduced separation between consecutive arrivals or consecutive departures on parallel runways less than 2500 feet apart.

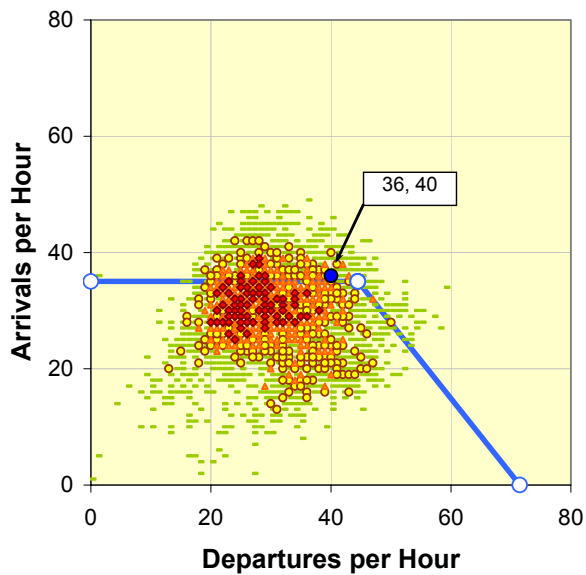
Additional information on these improvements may be found in the Introduction and Overview of this report, under “Assumptions.”

## Calculated Capacity (Today) and Actual Throughput

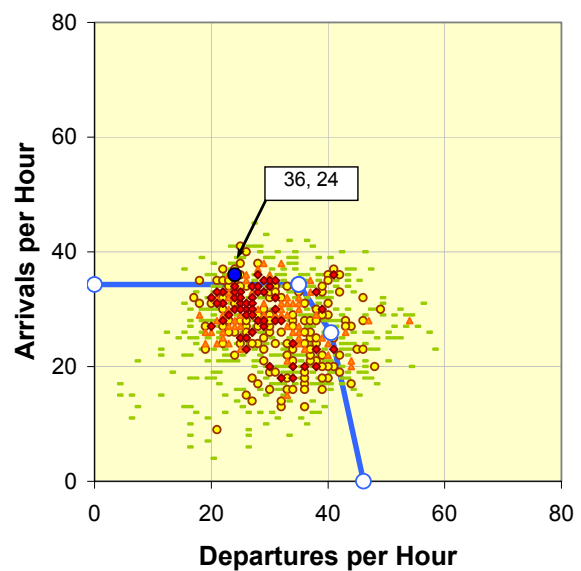
### Optimum Rate



### Marginal Rate



### IFR Rate



Hourly traffic data was obtained from the FAA ASPM database for January 2000 to July 2002 (excluding 11-14 September 2001), 7 AM to 10 PM local time. Facility reported rates were provided by ATC personnel at SEA.